

Title Effect of oligo-chitosan treatment on controlling postharvest anthracnose disease in banana fruit

Author Xiangchun Meng, Yanxia Tang, Junguang Xu, Ganjun Yi and Deqiu Lin

Citation Abstracts Book, 6th International Postharvest symposium, 8-12 April 2009, Antalya, Turkey. 256 pages.

Keyword Banana; anthracnose; oligo-chitosan

Abstract

The potential pre- and post-harvest use of oligo-chitosan, as disease resistance inducer and antifungal agent to reduce anthracnose disease caused by *Colletotrichum musae* in banana (Musa AAA, Cavendish CV. 'BaXi') fruit was investigated. Oligo-chitosan provided by Hainan Zhengye Zhongnong High Tech Ltd. was used through the experiments. In-vitro experiments on potato dextrose agar (PDA) revealed that oligo-chitosan could markedly inhibit the radial mycelial growth and spore germination of the fungi at a concentration of 2 g-L⁻¹ and above in the PDA medium. The higher concentrations of oligo-chitosan, the stronger antifungal activity of oligo-chitosan is. Spraying banana trees by oligo-chitosan at a concentration of 100 mg-L⁻¹ two or three times one month before harvest, then banana fruit harvested at 75-80% maturity were inoculated with spore suspensions of *Colletotrichum musae* at 2x10⁵ spores/mL. Storage was done at 22°C with 90-95% RH. Results showed that pre-harvest oligochitosan spraying significantly reduced both disease incidence and severity in banana fruit. Moreover, compared to water spraying control, pre-harvest oligo-chitosan treatment efficiently enhanced MDA content and stimulated PAL, CHI and β-1,3-GLU activity in banana fruits. In another experiment, banana fruit harvested at 75-80% maturity were first treated by 5 min dipping in oligo-chitosan solution at concentrations of 1.0%, then were inoculated. Results indicate that postharvest oligochitosan treatment before pathogen inoculation have no visible effect on anthracnose disease development. However, oligochitosan surface-coated treatment of banana (0.5%, 1.0%) fruits previously inoculated with anthracnose fungi considerably reduced rate and severity of anthracnose disease progression in banana fruit compared to the controls. The possible controlling mechanism of oligo-chitosan on banana anthracnose is under further research. This research indicates that spraying banana trees with oligo-chitosan few weeks before harvest and/or postharvest coating application of oligo-chitosan is a promising strategy for reducing anthracnose decay in storage.